REMARKS

Applicants acknowledge receipt of the Examiner's Non-Final Office Action dated September 22, 2006. All claims pending at that time were rejected. Specifically, claims 1 – 37 were rejected under 35 USC §102(e) as being anticipated by US Patent Application 2004/0260873 filed by Watanabe (Watanabe). In light of the following remarks, Applicants respectfully request the Examiner's reconsideration and reexamination of all pending claims.

Independent claim 1 recites "maintaining a copy of a data change log." Here, it is clear that two logs are recited in claim 1: a data change log and a copy thereof. In rejecting independent claim 1, the Office Action appears to cite to a portion of Watanabe as teaching a change log. However, the Office Action does not appear to allege that Watanabe teaches a copy of the data change log as required by claim 1.

The Office Action asserts the paragraph 7 of Watanabe teaches aspects of claim 1 including, presumedly, claim 1's change log. Paragraph 7 recites:

> [0007] Typically, only an initial backup is completely conducted of all designated primary data. Thereafter, only primary data that has been modified since the last backup is stored to the backup copy. Most often, the primary storage maintains a **primary storage change table** indicating modified primary storage data portions. During backup, the change table is read sequentially, and where a table entry indicates a modified primary data portion, a copy of the modified data portion is transferred to the backup system. The backup system then either separately stores the copy of the modified primary data portion (e.g., as with versioning) or replaces the corresponding backup data portion with the modified primary data portion. [emphasis added]

Paragraph 7 describes a primary storage change table, but does not describe a copy of the primary storage change table. Applicants assert claim 1 is patentably distinguishable since paragraph 7 of Watanabe does not teach or fairly suggest maintaining a copy of a data change log as required by independent claim 1.

The Office Action rejects independent claims 11, 19, 27 and, presumably, 35 for the same reason the Office Action rejects independent claim 1. Applicants assert independent claims 11, 19 and 27 are patentably distinguishable over the cited sections of Watanabe for the same or similar reasons that independent claim 1 is patentably distinguishable as set forth above.

With reference to FIGS. 6a and 6b of Watanabe, paragraph 87 describes a modification map 601 that appears to be equivalent to the change table set forth in paragraph 7 above. In paragraphs 87 - 89, Watanabe describes how secondary storage 404 (*see* Watanabe FIG. 4) is updated with respect to primary storage 402 modifications. In paragraph 87, updates to the primary can be conducted in conjunction with modification indicators of, presumably, modification map 601. A transfer manager 421 maintains a mapping of modification indicators indicating modifications made to storage media tracks or data [sic] blocks or other suitable data set portions since the last update. During a remote copy, transfer manager 421 accesses the mapping (presumably modification map 601) and initiates a transfer of each data set for which a corresponding modification indicator indicates a corresponding data set modification. This process is exemplified in paragraph 88 of Watanabe that sets forth:

> [0088] Thus, for example, transfer manager 421 might respond to a positive or "set" modification indicator for the first (left-most) indicator in modification map 601a by initiating a remote copy of a first block of primary volume-1 423a to secondary storage 402. Transfer manager 421 then clears or "reset" the indicator, resulting in the modification map 601b. Transfer manager 421 would further not initiate a remote copy for a negative modification indicator, and so on for the remaining blocks or other data port is utilized. (The particular mapping/indicators used can, of course, vary.)

Replication manager 441 of the secondary node (*see* Watanabe FIG. 4) maintains a replication mapping indicating updated remote copy datasets that have been replicated to corresponding replication data sets. *See* paragraph 89 of Watanabe. Paragraph 89 appears to describe the replication mapping in greater detail. However, there appears to be a typographical error in paragraph 89 of Watanabe; while this paragraph describes replication maps 602a and 602b, FIG. 6b shows replication maps 701a and 701b. For purposes of explanation, it will be presumed that replications maps 602a and 602b described in paragraph 89 are equivalent to replication maps 701a and 701b, respectively.

In paragraph 89, Watanabe describes that replication manager 441 responds to a reset replication indicator for the first indicator in the replication modification map 602a by initiating replication of a first block of remote copy volume-1 443a to a corresponding block of replication volume-1 441a. Replication manager 441 then sets the indicator, resulting in the replication map

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602b. Replication manager 441 will initiate a remote copy for a reset replication map indicator but not a set replication map indicator, and so on, for each of the remaining blocks.

Presuming modification map 601 of FIG. 6a is equated with claim 1's data change log, one of ordinary skill in the art, when viewing FIGs. 6a and 6b, would not equate the replication modification map 602 (701 in the Figure) described in Watanabe paragraph 89 as a copy of the modification map 601. Further, it appears that Watanabe uses the replication modification map 602 (701) for a different purpose when compared to the use of the modification map 601 as described in paragraphs 87 – 89. Accordingly, Applicants assert that paragraphs 87 – 89 and FIGS. 6a and 6b of Watanabe do not teach or fairly suggest claim 1 requirements of "maintaining a copy of a data change log." For these reasons, Applicants submit that claim 1 is patentably distinguishable over the cited sections of Watanabe.

Dependent claim 4 recites:

> receiving a request to perform a write operation on said primary data
>   volume;
> storing data associated with said write operation substantially
>   simultaneously on said data change log and said real-time copy of
>   said data change log in response to said receiving

The Office Action asserts that Watanabe teaches a system in which a request to perform a write operation is received by a primary data volume, citing paragraph 15 in support thereof. Thereafter, the Office Action asserts that data associated with said write operation is stored substantially simultaneously on said data change log and said real-time copy of said data change log as required by dependent claim 4, citing paragraph 111 of Watanabe in support thereof. The Office Action also appears to reference paragraphs 57 and 77 of Watanabe in rejecting dependent claim 4.

Applicants have reviewed same cited paragraphs of Watanabe and do not find any teaching or fair suggestion of storing data associated with a write operation on the data change log and the copy thereof as required by dependent claim 4. Dependent claim 4 further defines the limitations of independent claim 1 discussed above. To provide a *prima facie* basis for rejecting dependent claim 4 under 35 USC §102, the Office Action must assert that paragraphs 15, 111, 57 and/or 77 of Watanabe describe storing data associated with a write operation on the same data log and copy thereof, which were recited in independent claim 1; however, the Office

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Action has not asserted this. More particularly, the Office Action does not allege that data associated with the write operation in Wantanabe is stored on the primary storage change table of paragraph 7, which was cited as teaching the data change log of independent claim 1. Moreover, since the Office Action fails to assert that Watanabe teaches a copy of the change table of paragraph 7, it cannot follow that Watanabe stores data associated with a write operation on a copy of the storage change table, as required by dependent claim 4. For these reasons, Applicants assert that dependent claim 4 is patentably distinguishable over the cited sections of Watanabe.
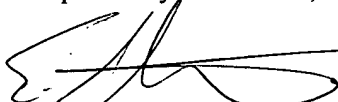
CONCLUSION

Applicant(s) submit that all claims are now in condition for allowance, and an early notice to that effect is earnestly solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is requested to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia, 22313-1450, on December 22, 2006.

_____ ___12/22/06___
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